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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,760	12/21/2000	Heinrich Meyer	485-00	3835

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07/01/2003

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EXAMINER

OLSEN, ALLAN W

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,760

Applicant(s)

MEYER ET AL.

Examiner

Allan W. Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 7 recites the broad recitation "at most 100 nm", and the claim also recites "preferably at most 20 [nm]" which is the narrower statement of the range/limitation. Similarly, claim 8 recites the broad recitation "at least 20 Pa", and the claim also recites "preferably at least 50 Pa" which is the narrower statement of the range/limitation.

Claim Objections

Claim 7 is objected to because of the following informalities: the R_a value of "20 μm " should be 20 nm. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-6, 9, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,990,363 issued to Suhr et al. (hereinafter, Suhr).

Claim 1: Suhr teaches a method of metallizing non-conductive substrates for example, fluorocarbon polymers based substrates. Suhr's process includes two distinct metal deposition steps. The first source of metal is from a glow discharge (plasma) induced decomposition of gaseous organo-metallic compounds. This results in the deposition of a thin metal film upon the poly-fluorocarbon substrate. The substrate having the thin metal coating is then placed into a plating bath until a metallization layer of the desired thickness is obtained. For the deposition of the first, thin, metal layer, Suhr teaches decomposing organometallic compounds derived from the group 8 metals (Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt) and the group 1 transition metals (Cu, Ag and Au).

Claim 3, 4: Suhr teaches the second metal deposition step can be the electroless plating of a nickel (see, for example, column 2, lines 48-53 and column 5, lines 6-7 and 59-61).

Claim 5: Suhr teaches that vapor of the organometallic is provided by volatilizing the solid or liquid form of the compound (i.e., evaporation or sublimation, column 3, lines 44-47).

Claim 6: Suhr pretreats the substrates by contacting them with a plasma comprising an etching gas (column 3, lines 61-65).

Claim 9: Suhr pretreating a fluoropolymer substrates by contacting it with a plasma comprising the etching gases CF₄ and O₂ (column 3, lines 61-65).

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Claim 10, 11: Suhr teaches the metallization layer can be patterned by either carrying out the metallization procedure upon substrate that has a patterned mask on its surface or applying a patterned mask over a conformal metal layer and then etching away the exposed portion of the metal layer (column 2, line 57 - column 3, line 3).

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suhr.

The teaching of Suhr, as noted above, is herein relied upon.

Suhr does not teach that during the step of pretreating the substrate with a plasma, the pressure within the plasma chamber is at least about 20 Pa.

It would have been obvious to one skilled in the art to use a pressure of at least 20 Pa because for the plasma metallization step, Suhr teaches using a plasma chamber pressure of 25 Pa and Suhr teaches that the process conditions during the plasma pretreatment of the substrate may be the same as the process conditions used during the plasma metallization step (column 3, lines 65-67 and column 4, lines 3-38).

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Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suhr in view of U.S. Patent 5,798,148 issued to Thomas et al. (hereinafter, Thomas).

As noted above, Suhr teaches the limitations of claim 1.

Suhr does not teach the treating the first metal layer with an oxygen plasma and then with a hydrogen plasma.

Thomas teaches metallizing a Teflon™ substrate with nickel (column 2, lines 11-16). Thomas teaches treating the metallization layer with an oxygen plasma and then a hydrogen plasma (column 1, line 61 - column 2, line 3). Thomas teaches that through such treatments one can increase the surface area of a vapor deposited metal layer and thereby realize an enhanced catalytic activity from the plasma treated metal layer (column 1, lines 37-40).

It would have been obvious to one skilled in the art to incorporate the oxygen and hydrogen plasma treatments taught by Thomas into the method of Suhr because Suhr uses the first metal layer as a seed or catalyst in the subsequent electroless deposition of the second metal layer and Thomas teaches a means by which the catalytic activity of the first metal layer can be enhanced. Thomas teaches that the surface area of a metal layer that has been vapor deposited upon a Teflon™ substrate may be increased by oxidizing the metal layer in an oxygen plasma and then reducing the oxidized metal with a hydrogen plasma treatment, and with an increase in surface area an increased catalytic activity may be realized.

Allowable Subject Matter

Claim 7 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 703-306-9075. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Mills, can be reached on 703-308-1633.

The general fax numbers for TC1700 are 703-872-9310 (non-after finals) and 703-872-9311(after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Allan Olsen, Ph.D.
June 21, 2003



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